DETAILED ACTION

This is in response to amendment to application no. 10/520,131 filed on October 10, 2008.

Claims 2-23, 32-38 and 40-42 are presented for examination.

Claims 11-13, 33-38 and 40-41 stand withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-10, 14-16, 18-23, 32 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagel (US Patent 4,826,774).

In re claims 2 and 32, Nagel discloses a metal complex that comprises a chain of cations and anions, wherein each anion and cation comprises a metal atom and the ions are bonded such that charge carriers of the metal atoms are delocalized along the chain and method of forming the same in a semiconductor device such as a chemical field effect transistor (Abstract; column 4 – column 7).

The examiner took "official notice" of the fact that a chemical field effect transistor comprises source and drain electrodes connected by a semiconductor channel, and a gate electrode capacitively coupled to the semiconductor channel via a gate insulator layer in the non-final rejection dated April 10, 2008. Since applicant has failed to

traverse the examiner's assertion of "official notice," the above well-known in the art statement is taken to be admitted prior art.

In re claim 3, Nagel discloses the ions are bonded to each other by means of the metal atoms (Abstract; column 4 – column 7).

In re claim 4, Nagel discloses each ion comprises a metal atom and ligands linked to the metal atom (Abstract; column 4 – column 7).

In re claim 5, Nagel discloses each ion is substantially planar (Abstract; column 4 – column 7).

In re claims 6-10 and 42, Nagel discloses the ligands comprise an alkyl chain (Abstract; column 4 – column 7).

In re claim 14, Nagel discloses the anions and cations are the same as each other (Abstract; column 4 – column 7).

In re claim 15, Nagel discloses the length of the chain be in the range from 10 to 10,000 ions (Abstract; column 4 – column 7).

In re claims 16, Nagel discloses the metal ions comprises the listed materials (Abstract; column 4 – column 7).

In re claims 18-22, Nagel discloses the ligands comprise the listed moieties (Abstract; column 4 – column 7).

In re claim 23, Nagel discloses the material is soluble (Abstract; column 4 – column 7).

Claims 2-10, 14-23, 32 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunugi et al (US Patent 6,160,267) in view of Papadimitrakopoulos (US Patent 5,946,550).

In re claims 2 and 32, Kunugi et al discloses a metal complex that comprises a chain of cations and anions, wherein each anion and cation comprises a metal atom and the ions are bonded such that charge carriers of the metal atoms are delocalized along the chain and method of forming the same in a semiconductor device (Figure 1; column 3 – column 6).

Papadimitrakopoulos discloses a transistor comprises source and drain electrodes connected by a semiconductor channel, and a gate electrode capacitively coupled to the semiconductor channel via a gate insulator layer, wherein the semiconductor channel includes a semiconductor material of a metal complex (Figure 6; Figure 7; column 8 – column 13).

The advantage is to obtain a transistor that provides effective electrical contact (column 13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the metal complex as taught by Kunugi et al with a transistor comprises source and drain electrodes connected by a semiconductor channel, and a gate electrode capacitively coupled to the semiconductor channel via a gate insulator layer, wherein the semiconductor channel includes a semiconductor material of a metal complex as taught by Papadimitrakopoulos in order to obtain a transistor that provides effective electrical contact.

In re claim 3, Kunugi et al discloses the ions are bonded to each other by means of the metal atoms (Figure 1; column 3 – column 6).

In re claim 4, Kunugi et al discloses each ion comprises a metal atom and ligands linked to the metal atom (Figure 1; column 3 – column 6).

In re claim 5, Kunugi et al discloses each ion is substantially planar (Figure 1; column 3 – column 6).

In re claims 6-10 and 42, Kunugi et al discloses the ligands comprise an alkyl chain (Figure 1; column 3 – column 6).

In re claim 14, Kunugi et al discloses the anions and cations are the same as each other (Figure 1; column 3 – column 6).

In re claim 15, Kunugi et al discloses the length of the chain be in the range from 10 to 10,000 ions (Figure 1; column 3 – column 6).

In re claims 16-17, Kunugi et al discloses the metal ions comprises the listed materials (Figure 1; column 3 – column 6).

In re claims 18-22, Kunugi et al discloses the ligands comprise the listed moieties (Figure 1; column 3 – column 6).

In re claim 23, Kunugi et al discloses the material is soluble (Figure 1; column 3 – column 6).

Response to Arguments

Applicant's arguments filed October 10, 2008 have been fully considered but they are not persuasive.

In response to applicant's argument that Nagel fails to disclose or suggest the material for a semiconductor channel, examiner asserts that Nagel discloses the claimed material being used in semiconductor devices such as chemical field effect transistors (i.e. Abstract). The material used in Nagel has semiconductive properties (i.e. Table 1, Table 2 and their corresponding texts) and it would have been obvious to one ordinary skill in the art to use the material in Nagel in a semiconductor channel of a field effect transistor.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

More specifically, in response to applicant's argument that Kunugi is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Kunugi is in the field of applicant's endeavor (semiconductor devices).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY HO whose telephone number is (571)270-1432. The examiner can normally be reached on M-Th: 10:30AM-9:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. H./
Examiner, Art Unit 2815

/Kenneth A Parker/
Supervisory Patent Examiner, Art Unit 2815